

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L32	1	(overlapp\$3 same (polygon or primitive) same (intensit\$3 or brightness or luminance) same pixel same image and (mesh or model)).CLM.	US-PGPUB	OR	ON	2007/05/03 10:13
L30	1	(overlapp\$3 same (polygon or primitive) same (intensit\$3 or brightness or luminance) same pixel same image).CLM.	US-PGPUB	OR	ON	2007/05/03 10:13

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L11	13	L10 and textur\$3 and (polygon or primitive)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 13:10
L10	114	345/589.ccls. and ((intensit\$3 or brightness) near7 (averag\$3 or mean))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 13:10
L9	1439	345/589.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2007/05/03 13:10

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L8	28	("5867166").PN. OR ("6057850").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2007/05/03 13:03
L3	24	("5022085"   "5155586"   "5185808"   "5231385"   "5251022"   "5325449"   "5398079"   "5488674"   "5581377"   "5611000"   "5630037"   "5649032"   "5745121"   "5815645"   "5838837"   "5852683"   "5982941"   "5982951"   "6075905"   "6128108").PN. OR ("6385349").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2007/05/03 13:02
S100	10	345/427.ccls. and (textur\$3 same extract\$3 same polygon)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:15
S99	9	345/427.ccls. and (textur\$3 same compar\$4 same polygon)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:15
S72	10	345/420.ccls. and (textur\$3 same compar\$4 same polygon)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:15
S70	26	345/419.ccls. and (textur\$3 same extract\$3 same polygon)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:15
S95	1	345/582.ccls. and (overlapp\$3 same (polygon or primitive) same (intensit\$3 or brightness or luminance) same pixel)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:12
S94	1	345/581.ccls. and (overlapp\$3 same (polygon or primitive) same (intensit\$3 or brightness or luminance) same pixel)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:10
S93	1	345/419.ccls. and (overlapp\$3 same (polygon or primitive) same (intensit\$3 or brightness or luminance) same pixel)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:10

## EAST Search History

S92	0	345/420.ccls. and (overlapp\$3 same (polygon or primitive) same (intensit\$3 or brightness or luminance) same pixel)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:10
S91	1	345/629.ccls. and (overlapp\$3 same (polygon or primitive) same (intensit\$3 or brightness or luminance) same pixel)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:10
S89	39	345/629.ccls. and ((intensit\$3 or brightness) near7 (averag\$3 or mean))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:09
S90	124	345/586.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2007/05/03 10:08
S88	36	345/582.ccls. and ((intensit\$3 or brightness) near7 (averag\$3 or mean))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:08
S7	105	345/586.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2007/05/03 10:08
S65	37	345/629.ccls. and ((intensit\$3 or brightness) near7 (averag\$3 or mean))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:07
S24	33	345/582.ccls. and ((intensit\$3 or brightness) near7 (averag\$3 or mean))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 10:07
S85	32	345/581.ccls. and ((intensit\$3 or brightness) near7 (averag\$3 or mean))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:58
S83	35	345/419.ccls. and ((intensit\$3 or brightness) near7 (averag\$3 or mean) same pixel)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:58

## EAST Search History

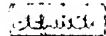
S82	21	345/420.ccls. and ((intensit\$3 or brightness) near7 (averag\$3 or mean))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:58
S80	1	S79 and (mean or averag\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:58
S79	8	345/420.ccls. and (textur\$3 same extract\$3 same polygon)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:58
S77	4	S72 and (mean or averag\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:58
S76	14	S70 and (mean or averag\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:58
S74	31	345/419.ccls. and (textur\$3 same compar\$4 same polygon)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:58
S69	8	345/420.ccls. and (textur\$3 same extract\$3 same polygon)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:58
S86	542	"345"/\$.ccls. and (pixel and ((brightness or intensit\$3) near7 (formula or equation)))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:57
S23	25	345/581.ccls. and ((intensit\$3 or brightness) near7 (averag\$3 or mean))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:57
S19	14	345/420.ccls. and ((intensit\$3 or brightness) near7 (averag\$3 or mean))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:56

## EAST Search History

S14	14	S10 and (mean or averag\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:56
S8	8	345/420.ccls. and (textur\$3 same extract\$3 same polygon)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/05/03 09:56
S68	14	chen-chia-chen.in.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2007/05/03 09:55
S67	2	chou-hong-long.in.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2007/05/03 09:55
S35	13	chen-chia-chen.in.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2007/05/03 09:55
S34	1	chou-hong-long.in.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2007/05/03 09:55



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### 1 [Point-based computer graphics](#)



Marc Alexa, Markus Gross, Mark Pauly, Hanspeter Pfister, Marc Stamminger, Matthias Zwicker

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available: [pdf\(8.94 MB\)](#)Additional Information: [full citation](#), [abstract](#), [citations](#)

This course introduces points as a powerful and versatile graphics primitive. Speakers present their latest concepts for the acquisition, representation, modeling, processing, and rendering of point sampled geometry along with applications and research directions. We describe algorithms and discuss current problems and limitations, covering important aspects of point based graphics.

### 2 [Spatial augmented reality: Modern approaches to augmented reality](#)



Oliver Bimber, Ramesh Raskar

July 2006 **ACM SIGGRAPH 2006 Courses SIGGRAPH '06**

Publisher: ACM Press

Full text available: [pdf\(2.45 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#)

This tutorial discusses the Spatial Augmented Reality (SAR) concept, its advantages and limitations. It will present examples of state-of-the-art display configurations, appropriate real-time rendering techniques, details about hardware and software implementations, and current areas of application. Specifically, it will describe techniques for optical combination using single/multiple spatially aligned mirror-beam splitters, image sources, transparent screens and optical holograms. Furthermore, ...

### 3 [Spatial augmented reality: a modern approach to augmented reality: Modern approaches to augmented reality](#)



Oliver Bimber, Ramesh Raskar

July 2005 **ACM SIGGRAPH 2005 Courses SIGGRAPH '05**

Publisher: ACM Press

Full text available: [pdf\(48.93 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This tutorial discusses the Spatial Augmented Reality (SAR) concept, its advantages and limitations. It will present examples of state-of-the-art display configurations, appropriate real-time rendering techniques, details about hardware and software implementations, and current areas of application. Specifically, it will describe techniques for optical


combination using single/multiple spatially aligned mirror-beam splitters, image sources, transparent screens and optical holograms. Furthermore, ...

#### 4 Level set and PDE methods for computer graphics



 David Breen, Ron Fedkiw, Ken Museth, Stanley Osher, Guillermo Sapiro, Ross Whitaker  
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**


**Publisher:** ACM Press

Full text available:  pdf(17.07 MB) Additional Information: [full citation](#), [abstract](#), [citations](#)

Level set methods, an important class of partial differential equation (PDE) methods, define dynamic surfaces implicitly as the level set (iso-surface) of a sampled, evolving nD function. The course begins with preparatory material that introduces the concept of using partial differential equations to solve problems in computer graphics, geometric modeling and computer vision. This will include the structure and behavior of several different types of differential equations, e.g. the level set eq ...

#### 5 Projectors: advanced graphics and vision techniques




 Ramesh Raskar  
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

**Publisher:** ACM Press


Full text available:  pdf(6.53 MB) Additional Information: [full citation](#)

#### 6 Real-time volume graphics



 Klaus Engel, Markus Hadwiger, Joe M. Kniss, Aaron E. Lefohn, Christof Rezk Salama, Daniel Weiskopf  
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**


**Publisher:** ACM Press

Full text available:  pdf(7.63 MB) Additional Information: [full citation](#), [abstract](#)


The tremendous evolution of programmable graphics hardware has made high-quality real-time volume graphics a reality. In addition to the traditional application of rendering volume data in scientific visualization, the interest in applying these techniques for real-time rendering of atmospheric phenomena and participating media such as fire, smoke, and clouds is growing rapidly. This course covers both applications in scientific visualization, e.g., medical volume data, and real-time rendering, ...

#### 7 GPGPU: general purpose computation on graphics hardware



 David Luebke, Mark Harris, Jens Krüger, Tim Purcell, Naga Govindaraju, Ian Buck, Cliff Woolley, Aaron Lefohn  
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**


**Publisher:** ACM Press

Full text available:  pdf(63.03 MB) Additional Information: [full citation](#), [abstract](#), [citations](#)


The graphics processor (GPU) on today's commodity video cards has evolved into an extremely powerful and flexible processor. The latest graphics architectures provide tremendous memory bandwidth and computational horsepower, with fully programmable vertex and pixel processing units that support vector operations up to full IEEE floating point precision. High level languages have emerged for graphics hardware, making this computational power accessible. Architecturally, GPUs are highly parallel s ...

#### 8 Texture mapping 3D models of real world objects



 Frederick M. Weinhaus, Venkat Devarajan  
December 1997 **ACM Computing Surveys (CSUR)**, Volume 29 Issue 4

**Publisher:** ACM Press

Full text available:  pdf(1.98 MB)

Additional Information: full citation, [abstract](#), [references](#), [index terms](#), [review](#)

Texture mapping has become a popular tool in the computer graphics industry in the last few years because it is an easy way to achieve a high degree of realism in computer-generated imagery with very little effort. Over the last decade, texture-mapping techniques have advanced to the point where it is possible to generate real-time perspective simulations of real-world areas by texture mapping every object surface with texture from photographic images of these real-world areas. The technique ...

**Keywords:** anti-aliasing, height field, homogeneous coordinates, image perspective transformation, image warping, multiresolution data, perspective projection, polygons, ray tracing, real-time scene generation, rectification, registration, texture mapping, visual simulators, voxels

## 9 [Status report of the graphic standards planning committee](#)



Computer Graphics staff

August 1979 **ACM SIGGRAPH Computer Graphics**, Volume 13 Issue 3

**Publisher:** ACM Press

Full text available:  pdf(15.01 MB) Additional Information: full citation, [references](#), [citations](#)


## 10 [Non-photorealistic rendering: Fast primitive distribution for illustration](#)



Adrian Secor, Wolfgang Heidrich, Lisa Streit

July 2002 **Proceedings of the 13th Eurographics workshop on Rendering EGRW '02**

**Publisher:** Eurographics Association

Full text available:  pdf(1.64 MB) Additional Information: full citation, [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper we present a high-quality, image-space approach to illustration that preserves continuous tone by probabilistically distributing primitives while maintaining interactive rates. Our method allows for frame-to-frame coherence by matching movements of primitives with changes in the input image. It can be used to create a variety of drawing styles by varying the primitive type or direction. We show that our approach is able to both preserve tone and (depending on the drawing style) hig ...


## 11 [A polygonal approximation to direct scalar volume rendering](#)



Peter Shirley, Allan Tuchman

November 1990 **ACM SIGGRAPH Computer Graphics, Proceedings of the 1990 workshop on Volume visualization VVS '90**, Volume 24 Issue 5

**Publisher:** ACM Press

Full text available:  pdf(635.28 KB) Additional Information: full citation, [abstract](#), [citations](#), [index terms](#)

One method of directly rendering a three-dimensional volume of scalar data is to project each cell in a volume onto the screen. Rasterizing a volume cell is more complex than rasterizing a polygon. A method is presented that approximates tetrahedral volume cells with hardware renderable transparent triangles. This method produces results which are visually similar to more exact methods for scalar volume rendering, but is faster and has smaller memory requirements. The method is best suited for d ...


## 12 [Three-dimensional object recognition](#)



Paul J. Besl, Ramesh C. Jain

March 1985 **ACM Computing Surveys (CSUR)**, Volume 17 Issue 1

**Publisher:** ACM Press

Full text available:  pdf(7.70 MB) Additional Information: [citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

A general-purpose computer vision system must be capable of recognizing three-dimensional (3-D) objects. This paper proposes a precise definition of the 3-D object recognition problem, discusses basic concepts associated with this problem, and reviews the relevant literature. Because range images (or depth maps) are often used as sensor input instead of intensity images, techniques for obtaining, processing, and characterizing range data are also surveyed.


### 13 [Ray tracing complex models containing surface tessellations](#)



John M. Snyder, Alan H. Barr

August 1987 **ACM SIGGRAPH Computer Graphics, Proceedings of the 14th annual conference on Computer graphics and interactive techniques SIGGRAPH '87**, Volume 21 Issue 4

**Publisher:** ACM Press

Full text available:  pdf(3.23 MB) Additional Information: [citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)



An approach to ray tracing complex models containing mathematically defined surfaces is presented. Parametric and implicit surfaces, and boolean combinations of these, are first tessellated into triangles. The resulting triangles from many such surfaces are organized in a hierarchy of lists and 3D grids, allowing efficient calculation of ray/model intersections. The technique has been used to ray trace models containing billions of triangles and surfaces never before ray traced. The organizing sc ...

### 14 [Session P14: biomedical applications: Variational classification for visualization of 3D ultrasound data](#)

Raanan Fattal, Dani Lischinski

October 2001 **Proceedings of the conference on Visualization '01 VIS '01**

**Publisher:** IEEE Computer Society

Full text available:  pdf(92.67 KB) Additional Information: [citation](#), [abstract](#), [references](#), [index terms](#)  
 [Publisher Site](#)

We present a new technique for visualizing surfaces from 3D ultrasound data. 3D ultrasound datasets are typically fuzzy, contain a substantial amount of noise and speckle, and suffer from several other problems that make extraction of continuous and smooth surfaces extremely difficult. We propose a novel opacity classification algorithm for 3D ultrasound datasets, based on the variational principle. More specifically, we compute a volumetric opacity function that optimally subdivides a set of sim ...

**Keywords:** 3D ultrasound, classification, isosurface extraction, opacity function, splatting, the variational principle, volume rendering




### 15 [Video tooning](#)



Jue Wang, Yingqiang Xu, Heung-Yeung Shum, Michael F. Cohen

August 2004 **ACM Transactions on Graphics (TOG), ACM SIGGRAPH 2004 Papers**, Volume 23 Issue 3

**Publisher:** ACM Press

Full text available:  pdf(1.12 MB)  Additional Information: [citation](#), [abstract](#), [references](#), [citations](#)  
 [Publisher Site](#)

We describe a system for transforming an input video into a highly abstracted, spatio-temporally coherent cartoon animation with a range of styles. To achieve this, we treat video as a space-time volume of image data. We have developed an anisotropic kernel mean shift technique to segment the video data into contiguous volumes. These provide a

simple cartoon style in themselves, but more importantly provide the capability to semi-automatically rotoscope semantically meaningful regions. In our sys ...


16 Model-based object recognition in dense-range images—a review



Farshid Arman, J. K. Aggarwal

March 1993 **ACM Computing Surveys (CSUR)**, Volume 25 Issue 1

**Publisher:** ACM Press

Full text available:  pdf(3.42 MB)

Additional Information: citation, [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

The goal in computer vision systems is to analyze data collected from the environment and derive an interpretation to complete a specified task. Vision system tasks may be divided into data acquisition, low-level processing, representation, model construction, and matching subtasks. This paper presents a comprehensive survey of model-based vision systems using dense-range images. A comprehensive survey of the recent publications in each subtask pertaining to dense-range image object recogni ...

**Keyword:** 3D object recognition, 3D representations, CAD-based vision, dense-range images, image understanding


17 Volume rendering of 3D scalar and vector fields with LNL



R. Crawfis, N. Max, B. Becker, B. Cabral

December 1993 **Proceedings of the 1993 ACM/IEEE conference on Supercomputing Supercomputing '93**

**Publisher:** ACM Press

Full text available:  pdf(2.06 MB)

Additional Information: citation, [references](#), [index terms](#)


18 Computational photography: The trilateral filter for high contrast images and meshes



Prasun Choudhury, Jack Tumblin

July 2005 **ACM SIGGRAPH 2005 Courses SIGGRAPH '05**

**Publisher:** ACM Press

Full text available:  pdf(1.03 MB)

Additional Information: citation, [abstract](#), [references](#), [index terms](#)

We present a new, single-pass non-linear filter for edge-preserving smoothing and visual detail removal for  $N$  dimensional signals in computer graphics, image processing and computer vision applications. Built from two modified forms of Tomasi and Manduchi's bilateral filter, the new "trilateral" filter smooths signals towards a sharply-bounded, piecewise-linear approximation. Unlike bilateral filters or anisotropic diffusion methods that smooth towards piecewise constant solutions, the tr ...


19 Cloth and flooring: The trilateral filter for high contrast images and meshes



Prasun Choudhury, Jack Tumblin

June 2003 **Proceedings of the 14th Eurographics workshop on Rendering EGRW '03**

**Publisher:** Eurographics Association

Full text available:  pdf(2.10 MB)

Additional Information: citation, [abstract](#), [references](#), [citations](#), [index terms](#)

We present a new, single-pass non-linear filter for edge-preserving smoothing and visual detail removal for  $N$  dimensional signals in computer graphics, image processing and computer vision applications. Built from two modified forms of Tomasi and Manduchi's bilateral filter, the new "trilateral" filter smooths signals towards a sharply-bounded, piecewise-linear approximation. Unlike bilateral filters or anisotropic diffusion methods that smooth towards piecewise constant solutions, the tr ...

## 20 Illustrating smooth surfaces



Aaron Hertzmann, Denis Zorin

July 2000 **Proceedings of the 27th annual conference on Computer graphics and interactive techniques SIGGRAPH 2000**

**Publisher:** ACM Press/Addison-Wesley Publishing Co.

Full text available: pdf(7.27 MB) Additional information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

We present a new set of algorithms for line-drawing rendering of smooth surfaces. We introduce an efficient, deterministic algorithm for finding silhouettes based on geometric duality, and an algorithm for segmenting the silhouette curves into smooth parts with constant visibility. These methods can be used to find all silhouettes in real time in software. We present an automatic method for generating hatch marks in order to convey surface shape. We demonstrate these algorithms with a drawing of a sphere.

**Keywords:** direction fields, hatching, non-photorealistic rendering, pen-and-ink illustration, silhouettes

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# [1 Collision detection and proximity queries](#)



Sunil Hadap, Dave Eberle, Pascal Volino, Ming C. Lin, Stephane Redon, Christer Ericson  
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

**Publisher:** ACM Press

Full text available: [pdf\(11.22 MB\)](#) Additional Information: [full citation](#), [abstract](#)

This course will primarily cover widely accepted and proved methodologies in collision detection. In addition more advanced or recent topics such as continuous collision detection, ADFs, and using graphics hardware will be introduced. When appropriate the methods discussed will be tied to familiar applications such as rigid body and cloth simulation, and will be compared. The course is a good overview for those developing applications in physically based modeling, VR, haptics, and robotics.

## [2 Projector advanced graphics and vision techniques](#)



Ramesh Raskar  
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

**Publisher:** ACM Press

Full text available: [pdf\(6.53 MB\)](#) Additional Information: [full citation](#)

## [3 The elements of nature: interactive and real-time techniques](#)



Oliver Deussen, David S. Ebert, Ron Fedkiw, F. K. Martin, Przemyslaw Prusinkiewicz, Doug Robinson, Jos Stam, Jerry Tessendorf  
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

**Publisher:** ACM Press

Full text available: [pdf\(17.65 MB\)](#) Additional Information: [full citation](#), [abstract](#)

This updated course on simulating natural phenomena will cover the latest research and production techniques for simulating most of the elements of nature. The presenters will provide movie production, interactive simulation, and research perspectives on the difficult task of photorealistic modeling, rendering, and animation of natural phenomena. The course offers a nice balance of the latest interactive graphics hardware-based simulation techniques and the latest physics-based simulation techniques.

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## [Geometric modeling based on triangle meshes](#) [Symmetric modeling based on](#)





## triangle

Mario Botsch, Mark Pauly, Christian Rossli, Stephan Biechhoff, Leif Kobbelt  
July 2006 SIGGRAPH 2006 Courses SIGGRAPH '06

Publisher: M Press

Full text available: pdf(24.22 MB) Additional Information: [citation](#), [references](#)

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## Spatially presented reality: Modern approaches to augmented reality



Oliver Bimonte, Ramesh Raskar

July 2006 SIGGRAPH 2006 Courses SIGGRAPH '06

Publisher: M Press

Full text available: pdf(2.45 MB) Additional Information: [citation](#), [abstract](#), [references](#)

This tutorial discusses the Spatial Augmented Reality (SAR) concept, its advantages and limitations. It will present examples of state-of-the-art display configurations, appropriate real-time rendering techniques, details about hardware and software implementations, and current areas of application. Specifically, it will describe techniques for optical combination using single/multiple spatially aligned mirror-beam splitters, image sources, transparent screens and optical holograms. Furthermore, ...



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## Spatially presented reality: a modern approach to augmented reality: Modern approaches to augmented reality



Oliver Bimonte, Ramesh Raskar

July 2005 SIGGRAPH 2005 Courses SIGGRAPH '05

Publisher: M Press

Full text available: pdf(48.93 MB) Additional Information: [citation](#), [abstract](#), [references](#), [index terms](#)

This tutorial discusses the Spatial Augmented Reality (SAR) concept, its advantages and limitations. It will present examples of state-of-the-art display configurations, appropriate real-time rendering techniques, details about hardware and software implementations, and current areas of application. Specifically, it will describe techniques for optical combination using single/multiple spatially aligned mirror-beam splitters, image sources, transparent screens and optical holograms. Furthermore, ...



7

## Exploiting perception in high-fidelity virtual environments: Exploiting perception in high-fidelity virtual environments



**Additional presentations from the 24th course are available on the citation page**

Mashhur M. Anis, Alan G. Chalmers, Ming C. Lin, Miguel A. Otaduy, Diego Gutierrez  
July 2005 SIGGRAPH 2005 Courses SIGGRAPH '05



Publisher: M Press



Full text available: pdf(5.07 MB) Additional Information: [citation](#), [pendices and supplements](#), [references](#), [cited by](#)



The objective of this course is to provide an introduction to the issues that must be considered when building high-fidelity 3D engaging shared virtual environments. The principles of human perception guide important development of algorithms and techniques in collaboration, graphical, auditory, and haptic rendering. We aim to show how perception is exploited to achieve realism in high fidelity environments within the limits of available finite computational resources. In this course we ...



**Keywords:** collaborative environments, haptics, high-fidelity rendering, human-computer interaction, multi-user, networked applications, perception, virtual reality




- 8 Point-based computer graphics   
 Marc Allard, Markus Gross, Mark Pauly, Hanspeter Pfister, Marc Stamminger, Matthias Zwicker  
 August 2004  
 ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04  
 Published by Morgan Kaufmann Press  
 Full text available as:  pdf(8.94 MB) Additional Information: [introduction](#), [abstract](#), [citations](#)
- This course introduces points as a powerful and versatile graphics primitive. Speakers present their latest concepts for the acquisition, representation, modeling, processing, and rendering of point sampled geometry along with applications and research directions. We discuss the algorithms and discuss current problems and limitations, covering important aspects of point based graphics.

- 9 Real-time volume graphics   
 Klaus B. Glaser, Markus Hadwiger, Joe M. Kniss, Aaron L. Lefohn, Christof Rezk Salama, Daniel Weiskopf  
 August 2004  
 ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04  
 Published by Morgan Kaufmann Press  
 Full text available as:  pdf(7.63 MB) Additional Information: [introduction](#), [abstract](#)
- The continuous evolution of programmable graphics hardware has made high-quality real-time volume graphics a reality. In addition to the traditional application of rendering volume data in scientific visualization, the interest in applying these techniques for real-time rendering of atmospheric phenomena and participating media such as fire, smoke, and fog is growing rapidly. This course covers both applications in scientific visualization, e.g., medical volume data, and real-time rendering, ...

- 10 Level set PDE methods for computer graphics   
 David M. Bae, Ron Fedkiw, Ken Museth, Stanley Osher, Guillermo Sapiro, Ross Whitaker  
 August 2004  
 ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04  
 Published by Morgan Kaufmann Press  
 Full text available as:  pdf(17.07 MB) Additional Information: [introduction](#), [abstract](#), [citations](#)
- Level set methods, an important class of partial differential equation (PDE) methods, define implicit surfaces implicitly as the level set (zero surface) of a sampled, evolving nD scalar field. The course begins with preparatory material that introduces the concept of using partial differential equations to solve problems in computer graphics, geometric modeling and computer vision. This will include the structure and behavior of several different types of PDEs, e.g. the level set equation, ...

- 11 Real-time shading   
 Marc C. Gort, Kurt Akeley, John C. Hart, Wolfgang Hübner, Michael McCool, Jason L. Mitchell, Randolph Whitely  
 August 2004  
 ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04  
 Published by Morgan Kaufmann Press  
 Full text available as:  pdf(7.39 MB) Additional Information: [introduction](#), [abstract](#)
- Real-time procedural shading was once regarded as a distant dream. When the first version of this course was offered four years ago, real-time shading was possible, but only with one-pass hardware or by combining the effects of tens to hundreds of rendering passes. Today, most every new computer comes with graphics hardware capable of interactively executing hundreds of thousands to tens of thousands of instructions. This course has been redesigned to address today's real-time shading capabilities.

- 12 General purpose computer graphics architecture and hardware   
 David M. Bae, Mark Harris, Jens Krüger, Tim Lenz, Mark Govindaraju, Ian Buck, Cliff



Wocik, J., and Lefohn  
August 2004  
Published by ACM Press  
Full text file: [pdf\(63.03 MB\)](#) Additional Information: [bibliography](#), [abstract](#), [citations](#)

The graphics processor (GPU) on today's commodity video cards has evolved into an extremely powerful and flexible processor. The latest graphics architectures provide tremendous memory bandwidth and computational horsepower, with fully programmable vertex and pixel processing units that support vector operations up to full IEEE floating point precision. High level languages have emerged for graphics hardware, making this computational power accessible. Architecturally, GPUs are highly parallel systems.

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State of the art of the graphic standard's planning committee  
Computer Graphics staff  
August 2004  
Published by ACM Press  
Full text file: [pdf\(15.01 MB\)](#) Additional Information: [bibliography](#), [references](#), [citations](#)

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Texture mapping 3D models of real-world scenes  
Fredric Weinhaus, Venkat Devaranjan  
December 2003  
Published by ACM Press  
Full text file: [pdf\(11.93 MB\)](#) Additional Information: [bibliography](#), [abstract](#), [references](#), [index terms](#)

Texture mapping has become a popular technique in the computer graphics industry in the last few years because it is an easy way to achieve a high degree of realism in computer-generated imagery with very little effort. Over the last decade, texture-mapping technologies have advanced to the point where it is possible to generate real-time perspective simulations of real-world areas by texture-mapping every object surface with a set of photographic images of those real-world areas. The technique ...

Keywords: anti-aliasing, height fields, homogeneous coordinates, image perspective projection, image warping, multiresolution data, perspective projection, polygons, ray-tracing, real-time scene generation, rectification, registration, texture mapping, visual simulation, voxels

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Shneiderman, Daniel, and physical computing  
Thomson, Michael, and Michael Kazhdan  
August 2004  
Published by ACM Press  
Full text file: [pdf\(11.96 MB\)](#) Additional Information: [bibliography](#), [abstract](#)

Large volumes of 3D data are readily becoming available in several fields, including CAD, molecular biology, and computer graphics. As the number of 3D models grows, there is an increasing need for computer systems to help people find the objects and discover relationships between them. Unfortunately, traditional text-based search techniques are not always effective for 3D models, especially when queries are ad-hoc in nature (e.g., find me objects that fit into this ...).


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Computer graphics group & animation  
Dana Angewandte, Christophe Hery, Seth Ligon, and Toshiaki Cno, Stephen Regelous, Douglas Sutterlin

August 2004 **ACM SIGGRAPH 2004 Courses: Notices SIGGRAPH '04**

Published by ACM Press

Full text file:  pdf (2.19 MB) Additional Information: introduction, abstract

One of the major challenges for special effects in movies is the production of realistic virtual crowds. This course will present state-of-the-art techniques and methods. The course will explain in detail the different approaches to virtual crowds: particle systems with locking techniques using attraction and repulsion forces, copy and pasting techniques, agent-based methods. The architecture of software tools will be presented including the MASSIVE software...


17 **Polynomial rendering on a stream architecture**



John F. Owens, William J. Dally, Ujval D. Kulkarni, Scott P. Poirer, Peter Mattson, Ben Mowery

Proceedings of the ACM SIGGRAPH 2004 Graphics hardware workshop on Graphics hardware HWVCS '04

Published by ACM Press

Full text file:  pdf (1.35 MB) Additional Information: introduction, abstract, references, citations, index

The use of a programmable stream architecture in polygon rendering provides a powerful mechanism to address the high performance needs of today's complex scenes as well as the need for flexibility and programmability in the polygon rendering pipeline. We describe how a polygon rendering pipeline maps into stream processors and kernels that operate on streams and how this mapping is used to implement the polygon rendering pipeline on a programmable stream processor. We compare our results...

Keywords: Open GL, SIMD, graphics hardware, hardware media processors, polygon rendering, stream architecture, stream processing, streams


18 **Video-based rendering**



Marius Follmann, Marc Pollefeys, Germa Chouh, Wojciech Matusik, Christian Theobalt

ACM SIGGRAPH 2004 Courses: SIGGRAPH '04

Published by ACM Press


Full text file:  pdf (1.15 MB) Additional Information: introduction, abstract

19 **Non-photorealistic rendering: Fast stochastic image synthesis for illustration**

Andrew A. Chalmers, Wolfgang Heidrich, Lisa Seitz

Proceedings of the 13th Eurographics workshop on Rendering EGRW '02

Published by Eurographics Association

Full text file:  pdf (1.1 MB) Additional Information: introduction, abstract, references, citations, index

In this paper we present a high-quality, non-photorealistic approach to illustration that synthesizes continuous tone by probabilistically distributing primitives while maintaining image coherence. Our method allows for non-stochastic frame coherence by matching sets of primitives with changes in the input image. It can be used to create a variety of drawing styles by varying the primitive type or direction. We show that our method is able to both preserve tone and (depending on the drawing style) high...

20 **Scene visibility of implicitly defined occluders**

G. F. H. R. K. K.

Proceedings of the 2003 Eurographics/ACM SIGGRAPH symposium on Geometry processing SIGGRAPH '03





Published by Eurographics Association

Full Text PDF icon Additional information: citation, abstract, [references](#), [citations](#), [index](#)

In recent years the ease of use and the flexibility in the editing process shifted into focus in modeling and animation applications. In this spirit we present a 3D mesh editing method that is similar to the simple constrained deformation (scodef) method<sup>9</sup>. We extend this method to the so-called mesh forging paradigm by adding an occluder to the environment. Our method resembles and was in fact motivated by the forging process where an anvil is used to give the manipulated object...

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### 1 COLD CATHODE FIELD EMITTER FLAT SCREEN DISPLAY

Inventor: GE SHICHAO; YAM LAP MAN; (+2)

Applicant: PIXTECH INC (US)

EC: H01J9/18B; H01J29/02K; (+2)

IPC: **H01J29/02; H01J29/46; H01J29/02** (+2)

Publication info: **WO9715912** - 1997-05-01

### 2 Cold cathode field emitter flat screen display

Inventor: GE SHICHAO (US); YAM LAP MAN (US); (+2) Applicant: PIXTECH INC (US)

EC: H01J9/14; H01J29/02K; (+2)

IPC: **H01J9/14; H01J29/02; H01J29/46** (+8)

Publication info: **US6377002** - 2002-04-23

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AND

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OR ▼

AND

overlap overlapping overlapped

OR ▼

AND

**Date of publication of application** --- e.g. 19980401 - 19980405

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AND

**IPC** --- e.g. D01B7/04 A01C11/02

If you use the OR operation, please leave a SPACE between keywords.



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